1. (Currently Amended) A coil arrangement comprising:

a first conductive member; and

a second conductive member electrically coupled to the first conductive member,

wherein the second conductive member forms a segment that has an approximate shape of an arc when viewed along a direction of extension of the first conductive member, and

wherein the first and second conductive members form at least one magnetic field gradient coil structure.

2. (Currently Amended) The coil arrangement of claim 1, further comprising:

a third conductive member, which is positioned approximately parallel to the first conductive member, and which is electrically coupled to the second conductive member,

wherein the first, second and third conductive members form at least one magnetic field gradient coil structure.

3. (Previously Presented) The coil arrangement of claim 2,

wherein the first conductive member is capable of receiving an electrical current,

wherein the second conductive member is adapted to pass the electrical current therethrough, and

wherein the electrical current exits through the third conductive member.

4. (Currently Amended) A coil arrangement comprising:

a first conductive member arranged along a first axis; and

a second conductive member arranged along a second axis which is approximately coaxial with the first axis,

wherein the first conductive member is adapted to allow a first current to flow in a first direction, and the second conductive member is adapted to allow a second current to flow in a second direction which is opposite to the first direction, and

wherein the first and second conductive members form at least one magnetic field gradient coil structure.

5. (Previously Presented) The coil arrangement of claim 4, wherein the first conductive member is offset axially from the second conductive member.

6. (Currently Amended) A ~~The~~ coil arrangement ~~of claim 5,further~~ comprising:

a first conductive member arranged along a first axis;

a second conductive member arranged along a second axis which is approximately coaxial with the first axis; and

a switch configured to dynamically control an offset between the first and the second conductive members,

wherein the first conductive member is offset axially from the second conductive member, and

wherein the first conductive member is adapted to allow a first current to flow in a first direction, and the second conductive member is adapted to allow a second current to flow in a second direction which is opposite to the first direction.

7. (Currently Amended) A magnetic resonance imaging system comprising a coil arrangement comprising:

a first conductive member; and

a second conductive member electrically coupled to the first conductive member,

wherein the second conductive member forms a segment that has an approximate shape of an arc when viewed along a direction of extension of the first conductive member, and

wherein the first and second conductive members form at least one magnetic field gradient coil structure.

8. (Currently Amended) The magnetic resonance imaging system of claim 7, further comprising:

a third conductive member, which is positioned approximately parallel to the first conductive member, and which is electrically coupled to the second conductive member,

wherein the first, second and third conductive members are provided in the at least one magnetic field gradient coil structure.

9. (Previously Presented) The magnetic resonance imaging system of claim 8,

wherein the first conductive member is capable of receiving an electrical current,

wherein the second conductive member is adapted to pass the electrical current therethrough, and

wherein the electrical current exits through the third conductive member.

10. (Currently Amended) A magnetic resonance imaging system comprising a coil arrangement comprising:

a first conductive member arranged along a first axis; and

a second conductive member arranged along a second axis which is approximately coaxial with the first axis;

wherein the first conductive member is adapted to allow a first current to flow in a first direction, and the second conductive member is adapted to allow a second current to flow in a second direction which is opposite to the first direction, and

wherein the first and second conductive members form at least one magnetic field gradient coil structure.

11. (Previously Presented) The magnetic resonance imaging system of claim 10, wherein the first conductive member is offset axially from the second conductive member.

12. (Currently Amended) A ~~The~~ magnetic resonance imaging system ~~of claim 11, further~~ comprising a coil arrangement comprising:

a first conductive member arranged along a first axis;

a second conductive member arranged along a second axis which is approximately coaxial with the first axis; and

a switch configured to dynamically control an offset between the first and the second conductive members,

wherein the first conductive member is offset axially from the second conductive member, and

wherein the first conductive member is adapted to allow a first current to flow in a first direction, and the second conductive member is

adapted to allow a second current to flow in a second direction which is opposite to the first direction.

13. (Currently Amended) A method of providing a coil arrangement comprising:

providing a first conductive member; and

providing a second conductive member electrically coupled to the first conductive member,

wherein the second conductive member forms a segment that has an approximate shape of an arc when viewed along a direction of extension of the first conductive member, and

wherein the first and second conductive members form at least one magnetic field gradient coil structure.

14. (Currently Amended) The method of claim 13, further comprising:

providing a third conductive member, which is positioned approximately parallel to the first conductive member, and which is electrically coupled to the second conductive member,

wherein the first, second and third conductive members are provided in the at least one magnetic field gradient coil structure.

15. (Previously Presented) The method of claim 14, wherein the first conductive member is capable of receiving an electrical current, wherein the second conductive

member is adapted to pass the electrical current therethrough, and wherein the electrical current exits through the third conductive member.

16. (Currently Amended) A method of providing a coil arrangement comprising:

providing a first conductive member arranged along a first axis; and

providing a second conductive member arranged along a second axis which is approximately coaxial with the first axis;

wherein the first conductive member is adapted to allow a first current to flow in a first direction, and the second conductive member is adapted to allow a second current to flow in a second direction which is opposite to the first direction, and

wherein the first and second conductive members form at least one magnetic field gradient coil arrangement.

17. (Previously Presented) The method of claim 16, wherein the first conductive member is offset axially from the second conductive member.

18. (Currently Amended) A ~~The~~ method ~~of claim 17, further comprising the step of~~ for providing a coil arrangement comprising:

providing a first conductive member arranged along a first axis;

providing a second conductive member arranged along a second axis which is approximately coaxial with the first axis; and

dynamically controlling an offset between the first and the second conductive members,

wherein the first conductive member is offset axially from the second conductive member, and

wherein the first conductive member is adapted to allow a first current to flow in a first direction, and the second conductive member is adapted to allow a second current to flow in a second direction which is opposite to the first direction.

19. (Previously Presented) A computer-readable medium for operating a magnetic resonance imaging system comprising a coil arrangement of claim 2, the computer-readable medium having a set of instructions operable to direct a processor to perform the steps of:

permitting the first conductive member to receive an electrical current,

permitting the second conductive member to pass the electrical current therethrough, and

permitting the electrical current to exit through the third conductive member.

20. (Currently Amended) A computer-readable medium for operating a magnetic resonance imaging system comprising a coil arrangement comprising a first conductive member arranged along a first axis and a second conductive member arranged along a

second axis which is approximately coaxial with the first axis, the computer-readable medium having a set of instructions operable to direct a processor to perform the steps of:

permitting a first current to flow in a first direction in the first conductive member; and

permitting a second current to flow in a second direction in the second conductive member, the second direction being opposite to the first direction,

wherein the first and second conductive members form at least one magnetic field gradient coil structure.

21. (Previously Presented) The computer-readable medium of claim 20 wherein the first conductive member is offset axially from the second conductive member.

22. (New) The coil arrangement of claim 1, wherein the at least one coil structure generates at least one gradient field.

23. (New) The coil arrangement of claim 1, further comprising at least one solenoid coil arrangement, including at least one solenoid.

24. (New) The coil arrangement of claim 23,

wherein the at least one solenoid coil arrangement comprises:

at least one first solenoid coil,

at least one second solenoid coil, and

wherein the at least one first solenoid coil is wound in a first direction, and the at least one second solenoid coil is wound in a second direction which is opposite to the first direction.

25. (New) The coil arrangement of claim 22, wherein the at least one coil structure generates at least one selectable non-uniform gradient field.

26. (New) The coil arrangement of claim 22, wherein the at least one coil structure generates at least one long-axis gradient field.

27. (New) The coil arrangement of claim 22, wherein the at least one coil structure generates at least one transverse gradient field.

28. (New) The coil arrangement of claim 24, wherein the at least one first solenoid coil is electrically connected to a first power source, and the at least one second coil is electrically connected to a second power source which is different from the first power source.

29. (New) The coil arrangement of claim 24, wherein the at least one first solenoid coil and the at least one second solenoid coil are configured to achieve at least one predetermined magnetic field transition.

30. (New) The coil arrangement of claim 1, wherein the second conductive member forms a segment that has a plurality of arcs which are approximately 360 degrees or less.

31. (New) The coil arrangement of claim 30, wherein the segment the arcs which are approximately 270 degrees or less.

32. (New) The coil arrangement of claim 30, wherein the segment that has the arcs which are approximately 180 degrees or less.

33. (New) The coil arrangement of claim 30, wherein at least a first one of the arcs is configured to allow a first current to flow in a first direction and at least a second one of the arcs is configured to allow a second current to flow in a second direction which is opposite to the first direction.

34. (New) The coil arrangement of claim 30, wherein at least a first one of the arcs is situated symmetrically opposite at least a second one of the arcs.

35. (New) The coil arrangement of claim 34, wherein the at least a first one of arcs is configured to allow a first current to flow in a first direction and the at least a second one of the arcs is adapted to allow a second current to flow in a second direction which is opposite to the first direction.

36. (New) The coil arrangement of claim 4, further comprising:

a plurality of switches configured to dynamically control an offset between the first and the second conductive members.

37. (New) The coil arrangement of claim 36, wherein at least a first switch of the plurality of switches allows current to flow through the first conductive member, and at

least a second switch of the plurality of switches prevents current from flowing through the second conductive member.

38. (New) The coil arrangement of claim 36, wherein the plurality of switches are configured to control at least one of a modifiable length of the coil arrangement or a distance between the first and second conductive members.

39. (New) The coil arrangement of claim 1, further comprising:

a third conductive member, which is positioned approximately parallel to the first conductive member, and which is electrically coupled to the second conductive member;

a fourth conductive member electrically coupled to the first conductive member and the third conductive member; and

a plurality of switches configured to dynamically control an offset between the second and the fourth conductive members.

40. (New) The coil arrangement of claim 39, wherein a first switch of the plurality of switches allows current to flow through the second conductive member, and a second switch of the plurality of switches prevents current from flowing through the fourth conductive member.

41. (New) The coil arrangement of claim 39, wherein the plurality of switches are configured to control at least one of a modifiable length of the coil arrangement or a distance between the second and fourth conductive members.

42. (New) The coil arrangement of claim 6, further comprising:

at least one further switch configured to dynamically control the offset between the first and the second conductive members.

43. (New) The coil arrangement of claim 42, wherein the switch allows current to flow through the first conductive member, and the at least one further switch prevents current from flowing through the second conductive member.

44. (New) The coil arrangement of claim 42, wherein the switch and the at least one further switch are configured to control at least one of a modifiable length of the coil arrangement or a distance between the first and second conductive members.

45. (New) The magnetic resonance system of claim 7, wherein the coil arrangement further comprises:

a third conductive member, which is positioned approximately parallel to the first conductive member, and which is electrically coupled to the second conductive member;

a fourth conductive member electrically coupled to the first conductive member and the third conductive member; and

a plurality of switches configured to dynamically control an offset between the second and the fourth conductive members.

46. (New) The magnetic resonance system of claim 10, where in the coil arrangement further comprises:

a plurality of switches configured to dynamically control an offset between the first and the second conductive members.

47. (New) The magnetic resonance system of claim 12, wherein the coil arrangement further comprises:

at least one other switch configured to dynamically control the offset between the first and the second conductive members.

48. (New) The computer-readable medium of claim 19, wherein the set of instructions further having the steps of:

permitting a plurality of switches to dynamically control an offset between the second conductive member and a fourth conductive member,

wherein the fourth conductive member is electrically coupled to the first conductive member and the third conductive member.

49. (New) The computer-readable medium of claim 19, wherein the set of instructions further having the steps of:

facilitating a plurality of switches to dynamically control an offset between the second conductive member and a fourth conductive member,

wherein the fourth conductive member is electrically coupled to the first conductive member and the third conductive member, and

wherein the plurality of switches is configured to control at least one of a modifiable length of the coil arrangement or a distance between the second and the fourth conductive members.

50. (New) The computer-readable medium of claim 20, wherein the set of instructions further having the steps of:

facilitating a plurality of switches to dynamically control an offset between the first and the second conductive members.

51. (New) The computer-readable medium of claim 20, wherein the set of instructions further having the steps of:

facilitating a plurality of switches to dynamically control an offset between the first and the second conductive members,

wherein the plurality of switches is configured to control at least one of a modifiable length of the coil arrangement or a distance between the second and the fourth conductive members.

52. (New) The computer-readable medium of claim 21, wherein the set of instructions further having the steps of:

facilitating a plurality of switches to dynamically control an offset between the first and the second conductive members.

53. (New) The computer-readable medium of claim 21, wherein the set of instructions further having the steps of:

facilitating a plurality of switches to dynamically control an offset between the first and the second conductive members,

wherein the plurality of switches is configured to control at least one of a modifiable length of the coil arrangement or a distance between the second and the fourth conductive members.